

WHAT IS CLAIMED IS:

1. A method for generating customized photo album pages for a collection of digital images, said method comprising the steps of:

obtaining a plurality of digital images;

automatically grouping the images into one or more image sets based on at least one of grouping by events and grouping by people present in the images;

automatically profiling the images within each image set according to image content, thereby relating a particular image set to one or more design themes;

providing a database of design elements that may be used to generate customized photo album pages;

utilizing the design themes generated by the profiling step to automatically suggest one or more design elements from the database of design elements; and

automatically generating a customized photo album page layout for each image set by applying one or more of the suggested design elements to the page layout.

2. The method as claimed in claim 1 wherein the step of automatically profiling the images comprises profiling with an emphasis on the description of people present in the image.

3. The method as claimed in claim 2 wherein the step of profiling the images comprises profiling with an emphasis on the description of at least one of the ages and genders of the people present in the image.

4. The method as claimed in claim 1 wherein the step of profiling the images comprises profiling with an emphasis on the facial characteristics of people present in the image.

5. The method as claimed in claim 4 wherein the step of profiling the images comprises profiling with an emphasis on the type of image as related to the number and size of faces of persons in the images.

6. The method as claimed in claim 5 wherein the type of image relates the number and size of faces of persons in the images to individual portraits, group portraits, large group pictures, snapshot pictures and pictures without faces.

7. The method as claimed in claim 1 wherein the step of profiling the images comprises profiling with an emphasis on the distribution of color in the images.

8. The method as claimed in claim 1 wherein the suggested design elements are initially presented to a user as a plurality of design choices from which the customized photo album page layouts may be generated.

9. The method as claimed in claim 8 wherein the user selects said one or more of the suggested design elements that are used in the step of automatically generating a customized album page layout for each image set.

10. A method for generating customized photo album pages and prints, said method comprising the steps of:

accessing a plurality of digital still images;
detecting images of human faces in the plurality of digital images;
classifying the images of detected faces by age group and by gender, thereby providing classified faces associated with each image;
based on the classified faces in each image, assigning each image to a face-based photo profile;

using the face-based photo profile to suggest suitable design choices; and
utilizing the suggested suitable design choices to lay out the images into customized album pages.

11. The method as in claim 10 further including the step of printing of the customized album pages.

12. The method as claimed in claim 10, wherein accessing a plurality of digital still images is based on accessing groups depicting at least one of the same event and the same person.

13. The method as claimed in claim 10, wherein the step of detecting images of human faces in the plurality of digital images is performed by a face detector.

14. The method as claimed in claim 10 wherein the age group and gender classification is performed by binary classifiers that are combined by use of an AdaBoost algorithm.

15. The method as claimed in claim 14 wherein input features to the binary classifiers are obtained by computing facial measurements from points generated by an active shape model based on local texture matching.

16. The method as claimed in claim 10 wherein an emphasis score is assigned to each image before laying out the images into album pages.

17. The method as claimed in claim 10 wherein the photo profile includes at least one of an image type with an emphasis on the presence of people in the image, the ages and genders of any people that are present, and the color distributions in the image.

18. The method as claimed in claim 17 wherein the image type is based on the number and sizes of faces present in the image.

19. A method for generating customized photo album pages, said method comprising the steps of:

- accessing a plurality of digital still images;
- detecting one or more events within the plurality of still images;
- for each event detected, detecting images of human faces in the plurality of digital images belonging to that event;
- grouping the detected faces using facial similarity such that each group depicts a unique individual;
- classifying the detected faces by age group and by gender;
- based on the classified faces in each image, assigning each image to a face-based photo profile;
- using the face-based profile obtained to suggest suitable design choices;
- laying out the images into album pages; and
- printing the customized album pages.

20. The method as claimed in claim 19, wherein detecting images of human faces in the plurality of digital images is performed by a face detector.

21. The method as claimed in claim 19, wherein the age group and gender classification is performed by binary classifiers combined by means of an AdaBoost algorithm.

22. The method as claimed in claim 21, wherein input features to the binary classifiers are obtained by computing facial measurements from the points generated by an active shape model based on local texture matching.

23. The method as claimed in claim 19, wherein an emphasis scores is assigned to each image before laying out the images into album pages.

24. The method as claimed in claim 19, wherein the step of detecting an event is achieved by using an event clustering algorithm based on at least one of image date/time and image content information.

25. The method as claimed in claim 19, wherein the photo profile includes at least one of the image type with an emphasis on the presence of people in the image, the ages and genders of any people that are present, and the color distributions in the image.

26. The method as claimed in claim 25 wherein the image type is based on the number and sizes of faces present in the image.

27. A method for generating customized photo album pages and prints, said method comprising the steps of:

accessing a plurality of digital still images;
detecting images of human faces in the plurality of digital images;
grouping the detected faces using facial similarity such that each group depicts a unique individual;

classifying the faces detected by age group and by gender;
for each group of classified faces, detecting one or more events within each group;

based on the classified faces in each image, assigning each image to a face-based photo profile;

using the face-based profile obtained to suggest suitable design choices;

laying out the images into album pages; and
printing the customized album pages.

28. The method as claimed in claim 27, wherein locating images of human faces in the plurality of digital images is performed by a face detector.

29. The method as claimed in claim 27, wherein the age group and gender classification is performed by binary classifiers combined by means of an AdaBoost algorithm.

30. The method as claimed in claim 29, wherein input features to the binary classifiers are obtained by computing facial measurements from the points generated by an active shape model based on local texture matching.

31. The method as claimed in claim 27, wherein an emphasis score is assigned to each image before laying out the images into album pages.

32. The method as claimed in claim 27, wherein event detection is achieved by using an event clustering algorithm based on at least one of image date/time and image content information.

33. The method as claimed in claim 27, wherein the photo profile includes at least one of the image type with an emphasis on the presence of people in the image, the ages and genders of any people that are present, and the color distributions in the image.

34. The method as claimed in claim 33 wherein the image type is based on the number and sizes of faces present in the image.